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Leaf structure and physical factors.—Most American ecologists have paid attention to the distributional rather than to the anatomical phases of their subject. For this reason the contribution of Mrs. CLEMENTS¹⁶ has been particularly welcome. Few if any investigators have so thoroughly related leaf structure to definite physical factors. After a brief historical sketch, and a survey of the physical factors studied (light, water content of the soil, humidity, temperature), a detailed presentation is given of the characteristics of the mesophyll and epidermis of a large number of the plant species of various habitats in the Pike's Peak region of Colorado. The plants are divided into two classes, those confined to one habitat, and those that occur in two or more habitats (polydemic species). The latter seem to be the most numerous, and of course are the most interesting, as showing the range of specific variation. The various types of polydemic species are grouped so as to bring out graphically the effects of the various factors. The use of the word endemic for plants confined to one habitat, and mesophyll for a mesophytic leaf seem unfortunate in view of the long and wide use of these words in other senses. Among the more interesting of the results and conclusions, we may note that the lack of palisade cells is regarded as adaptational in many hydrophytes, but hereditary rather than adaptational in monocotyls; a typical xerophyte is regarded as having the chlorenchyma made up entirely of palisade cells; while light is regarded as the dominant factor in determining the palisade structure and close cell texture in xerophytes, dryness of air or soil is necessary for the extreme expression of this result. This paper is one that should stimulate many to carry on work along the lines of ecological anatomy.—HENRY C. COWLES.

Tomato rot.—The blossom end rot of tomatoes is again the subject of study. This is a widespread disease which has been studied repeatedly but without concordant results. The rot has been heretofore variously attributed to *Macrosporium*, *Fusarium*, *Cladosporium*, and to bacteria, while some workers have failed to find any parasites at all. The latest bulletin, by Miss SMITH,¹⁷ describes the discovery, after very careful search, of small tufts of a colorless mycelium, protruding from intercellular spaces between the blackened walls into the still healthy tissue. Affected pieces of tissue in a moist chamber repeatedly developed an abundant growth of *Fusarium*. The affected tissue showed no bacteria. Pure cultures of the *Fusarium* were isolated and inoculations upon green fruit were successful, sometimes through the style but much more frequently through punctures in the epidermis. This disease does not develop well or at all upon old tomatoes, its damage being limited to young fruit. The writer correlates this fact with the increase of malic acid as the fruit increases in size; since her cultures prove that malic acid is extremely unfavorable to the growth of this species of *Fusarium*.

¹⁶ CLEMENTS, EDITH S., The relation of leaf structure to physical factors. Trans. Amer. Mic. Soc. 1905:19-102.

¹⁷ SMITH, ELIZABETH H., Mass. Agr. Exp. Sta. Technical Bull. 3. April 1907.